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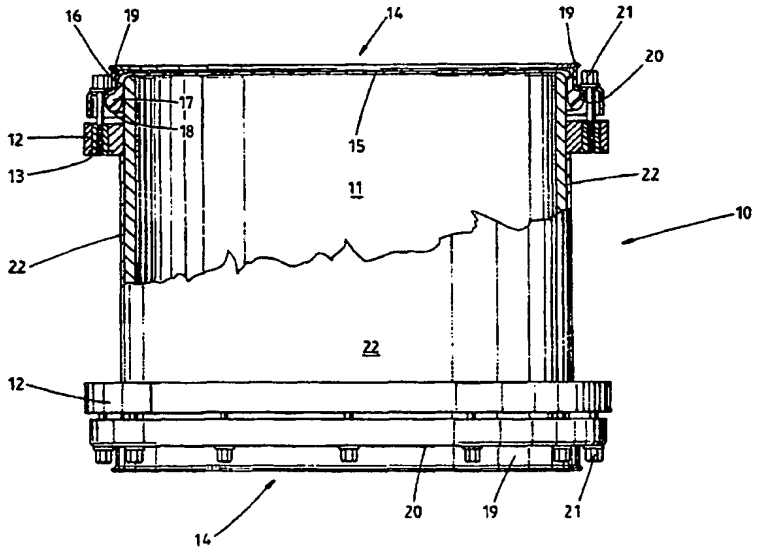

(57) Abstract

A drum (10) is formed by producing a cylindrical shell (11), establishing a pair of spaced annular rings (12) near but not at respective ends of the shell (11), positioning sleeve nuts (13) in apertures at circumferentially spaced intervals around each of the rings (12), positioning skins (15) over each respective end, and clamping each skin (15) in place and stretching it by tuning bolts (21) which extend through a retaining hoop (19) and engage the nuts (13) to urge the hoop (19) in an axial direction towards the centre of the drum (10).

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"DRUM CONSTRUCTION"

This invention relates to a method of construction of a musical drum, and to a drum when constructed by that method.

BACKGROUND OF THE INVENTION

The usual method of construction of a musical drum is to firstly form a cylindrical shell, most commonly in timber, the shell having apertures extending through it near each end, and those apertures have fastener mounts secured to them, each of the drum heads comprising an annular flanged hoop which overlies the bead of the skin and tensions it while at the same time retaining it in firm contact with the outside surface of the shell near its end, the tensioning being effected by a plurality of screws passing through apertures in a portion of the rim and engaging the mounts which are secured around the outer surface of the shell.

There are a number of problems associated with this form of construction, firstly in that each mount needs to be produced independently of the others and usually comprises a casting which is plated and secured to the outer surface by screws passing inwardly into the drum from inner surface of the shell, and form obstructions, a gasket being positioned between the casing and the outer surface.

This arrangement places only the ends of the shell into compression, leaving the intermediate portion of the shell free of imparted stress to move in a vibratory manner so that a "natural" sound is achieved. However, the shell contains apertures through which the fasteners pass, and it is acknowledged in the art that a "clean" inner surface, free of obstructions or apertures, is desirable.

On occasions there has been a requirement for the colour of a drum to be changed, and instances occur wherein the colour is imparted to the outer surface of the shell by a sheet of coloured plastics material which is adhered to the outer surface, in some cases the edges abutting and in other cases the edges overlapping. As presently constructed, the mounts require removal if colour change is required, a subsequent replacement after a new sheet has been adhered to the surface. The colour change has been a slow and tedious process.

The number of parts involved in each tension mount assembly, and the number of tension mount assemblies required contribute largely to the high cost of a musical drum.

The main object of this invention therefore is to provide a simplified construction which will be more easily effected and which will result in a drum which does not need to have the disadvantage of apertures or obstructions in its side wall otherwise required for the securing of tension mounts.

A second object of the invention is to provide a drum wherein there is little likelihood of distortion of the inner shell surface due to possible uneven tightening of the tuning adjustment bolts, and wherein only the ends of the shell are placed under compression.

BRIEF SUMMARY OF THE INVENTION

In one embodiment of the invention, a drum is formed by producing a cylindrical shell, establishing a pair of spaced annular rings near but not at respective ends of the shell to surround the shell, positioning sleeve nuts in apertures at circumferentially spaced intervals around each of the rings, positioning skins over each respective end, and clamping each skin in place and stretching it by tuning bolts which extend through a retaining hoop and engage the nuts to urge the hoop in an axial direction towards the centre of the drum. The hoop and skin assembly can be in accordance with known art, but use of the rings reduces the amount of the shell which is subject to compression forces, avoids the need to use fasteners which extend through apertures through the shell for retention of the hoop or hoops, spreads any forces imparted to the shell to be evenly distributed around the shell, and maintains the shell ends circular.

If a tomtom mounting is to be located on the exterior of a drum and intermediate its ends, it can also be mounted to the shell outer surface, so that there are no apertures at all in the shell, but this arrangement does not necessarily form part of the invention.

The cost of the two annular rings is very much less than the cost of a large number of tension mount assemblies which are commonly used, and in the instance of the drum shell being moulded, the rings can be moulded at the same time.

There is often a need to vary decor of a drum, and in the invention the outer shell surface between the rings is clear of obstruction (except if a tomtom is used), and further in the invention a rectilinear sheet of colour plastics material is wrapped around the outside of the shell between the rings, and the ends overlapped and retained by touch-and-hold strips. This can be readily substituted by a sheet of different colour. This facility is not lost if a tomtom

attachment exists, the sheet merely having an aperture through which the attachment passes.

DETAILED DESCRIPTION OF THE DRAWINGS

An embodiment of the invention is described hereunder in some detail with reference to and is illustrated in the accompanying drawings, in which:

Fig 1 is a partly sectioned side view of a drum;

Fig 2 is an "exploded" perspective view;

Fig 3 shows a first method of securing an annular ring to the outer surface of a cylindrical shell;

Fig 4 shows a method which is an alternative to that in Fig 3; and

Fig 5 is a partly sectioned side view of a shell and ring combination in a unitary moulding.

In Fig 1 to 4 of the drawings, a drum 10 comprises a shell 11 of hollow cylindrical shape, preferably formed of timber, and secured to the outer surface of the shell there are two outstanding annular rings 12, each annular ring 12 containing a plurality of circumferentially spaced apertures which contain flanged sleeve nuts 13.

Each head assembly 14 of the drum is substantially in accordance with known art, and comprises a "skin" 15 formed from a suitable plastics material such as that sold under the registered trade mark "Mylar", at least the upper skin 15 being downturned at its periphery 16 and terminating in a bead 17 itself protected by a metal sheath 18. A hoop 19 overlies the bead 17 radially, and has a shelf 20 containing apertures through which respective tuning bolts 21 pass and engage respective sleeve nuts 13.

The rings 12 may be of plywood laminated on flat surfaces, but it is preferred that the ply be laminated as shown in Fig 3, wherein a strip of plywood 25 is wound in a spiral laminate around and adhered to itself and to the outer surface of shell 11 as it is rotated between head and tail stocks 26 of a winding machine, to form rings designated 12a. They may be subsequently trimmed, drilled, and have the sleeve nuts 13 inserted in the drilled apertures.

The trimming operation can be avoided if the rings 12b are premoulded from suitable lignocellulose particulate material (as sold under the trade mark "Customwood") or polymeric material as shown in Fig 4, and subsequently moved axially over said shell and cemented in place at 27.

In Fig 5, the shell 11 is moulded from particulate lignocellulose material, and the rings 12c are moulded at the same time from the same material,

thereby avoiding adhering the rings to the shell.

The cross-sectional shape of the rings 12 is illustrated as generally rectilinear, as shown in Fig 1. However, since the rings have some bearing on the resonant characteristics of the drum, the cross-sectional shape may be varied to suit specific shells.

A further advantage of this invention is that, except for a tomtom mounting which is not herein shown, a rectilinear colour sheet 22 may be simply wrapped around the outer surface of the shell 11 and preferably overlapped but alternatively having its edges abutting, with a minimum of change required. This is further enhanced if the interface between the inner surface of one end of the colour sheet 22 and the outer surface of the other are provided with touch-and-hold fastening means 23, as for example sold under the registered trade mark "VELCRO". The upper and lower edges of sheet 22 lie contiguous with facing surfaces of rings 12.

There are therefore several advantages of the invention over known art:

a. The construction method is simpler and faster than the construction method utilising tension mount assemblies.
b. There is a large reduction in the number of apertures which pierce the shell 11, and the number of interior obstructions.
c. The assembly time is substantially reduced since the time taken for inserting the sleeve nuts 13 and the fastening screws 21 is very much less than the time taken for attaching all the tension mounts otherwise required.
d. The cost is less.
e. The hoop assists the shell in maintaining a perfect circular shape and provides means which strengthen the shell.
f. The procedure for changing colour is so efficient that colour can be changed in a matter of moments without the need for adhesives to be used.
g. The drum is more easily cleaned, due to less obstruction.
h. Improved sound quality due to less obstruction on inside of shell.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Method of construction of a musical drum of the type having a cylindrical shell and respective head assemblies at each end of the shell, each head assembly having a skin with a bead around its periphery, and an apertured hoop overlying the bead, comprising

establishing a pair of spaced apertured annular rings near but not at respective ends of the shell to surround the shell,

positioning sleeve nuts in apertures in the rings at circumferentially spaced intervals around the rings,

positioning a plurality of tuning bolts through the apertures of each said hoop to threadably engage said sleeve nuts and thereby draw each said hoop towards its adjacent said ring and thereby tension said skin.

2. Method according to claim 1 wherein said establishing of each of the annular rings to respective ends of the shell comprises adhering an end of a strip of ply wood to the outer surface of the shell, and rotating the shell and winding the plywood strip around the shell as a spiral laminate while further adhering the strip to the shell and to itself, and

subsequently trimming the spiral laminate, and drilling said apertures in said rings.

3. Method according to claim 1 comprising moulding said shell and spaced rings as a unitary moulding of particulate lignocellulose material, and drilling said apertures in said rings after moulding

4. Method according to claim 1 comprising moulding each said ring of mouldable material, drilling said apertures in the ring, moving the ring axially over said shell and cementing it in place to the outer surface of said shell.

5. Method according to claim 4 comprising moulding each said ring of mouldable lignocellulose particulate material.

6. Method according to claim 1 comprising affixing touch-and-hold material to ends of a rectilinear colour sheet of plastics material, wrapping the sheet around the shell with its edges contiguous with facing surfaces of the rings, and overlapping the ends with the touch-and-hold material thereby releasably retaining the ends together.

7. A musical drum constructed by the method according to claim 1 and of the type having a cylindrical shell and respective head assemblies at each end of the shell, each head assembly having a skin with a

bead around its periphery and an apertured loop overlying the bead, comprising

a pair of spaced apertured annular rings near but not at respective ends of the shell surrounding the shell,

circumferentially spaced apertures in the rings, sleeve nuts in respective apertures, and

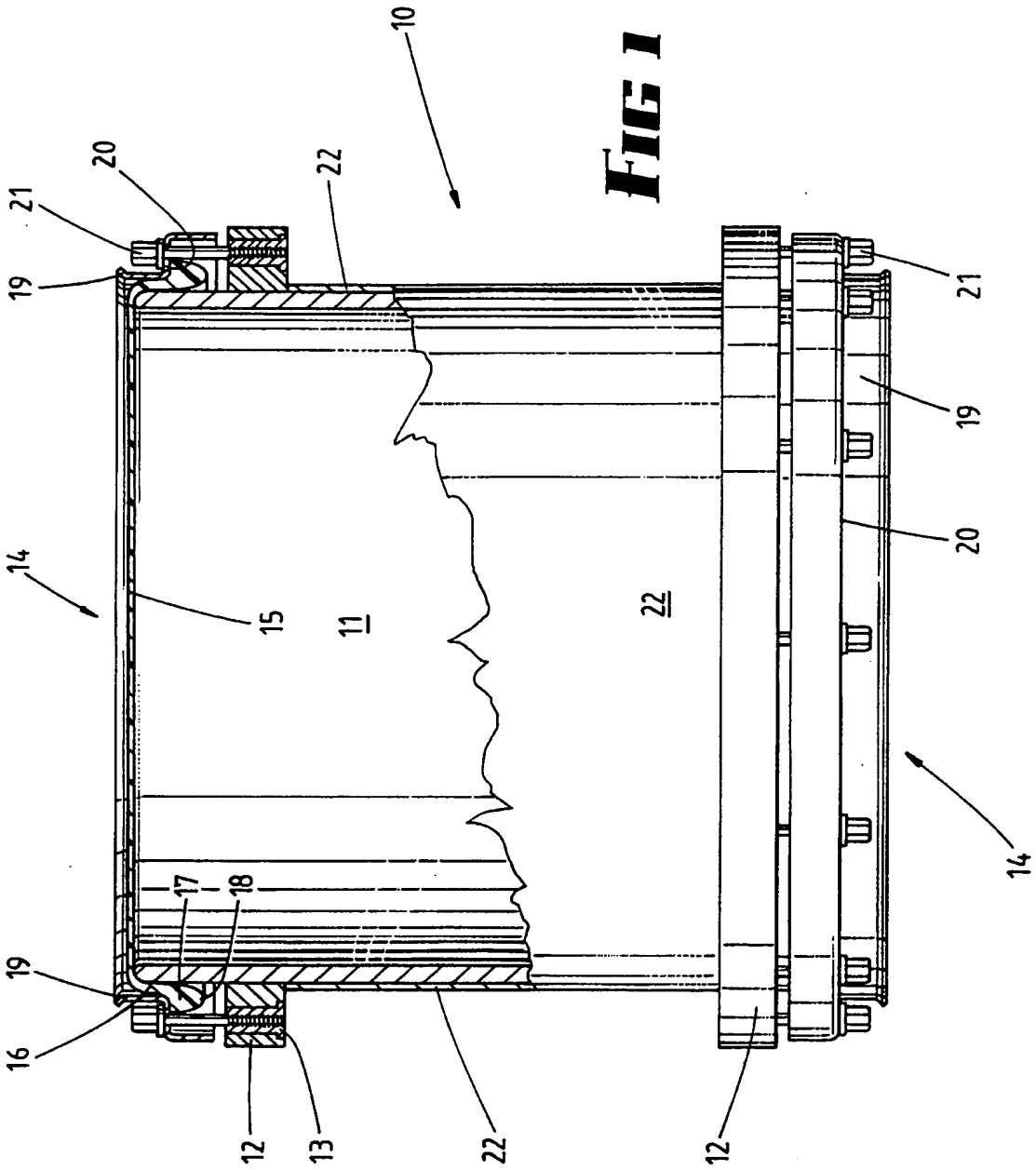
tuning bolts extending through the apertures in the loop and threadably engaging said sleeve nuts.

8. A musical drum according to claim 7 wherein each said annular ring comprises a strip of plywood wound in a spiral laminate around the shell, and adhesive cementing the plywood to the shell and to itself.

9. A musical drum according to claim 7 wherein each said annular ring comprises moulded particulate lignocellulose material, and adhesive cementing each said ring to the outer surface of the shell.

10. A musical drum according to claim 6 further comprising a rectilinear colour sheet of plastics material surrounding said cylindrical shell between said rings, edges of said sheet lying contiguous with facing surfaces of said rings, and ends of said sheet overlapping, each of said overlapping ends having touch-and-hold material thereon which co-acts with the touch-and-hold material of the other of said end to releasably retain the ends together.

FIG 1



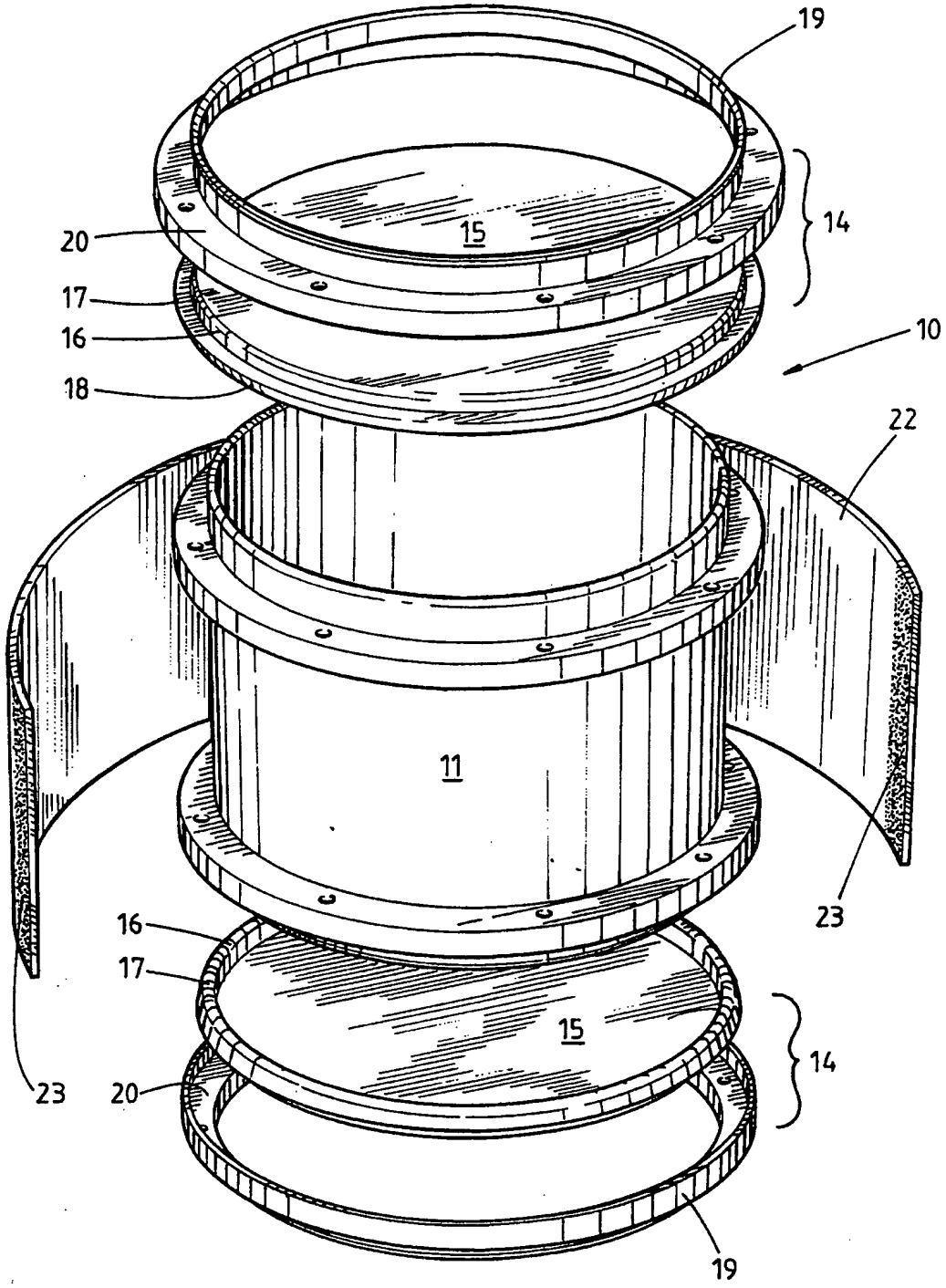


FIG 2

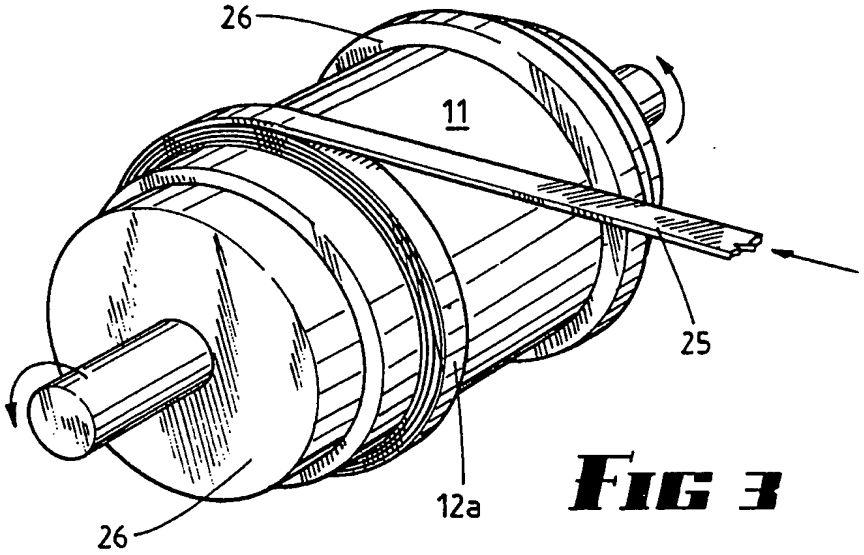


FIG 3

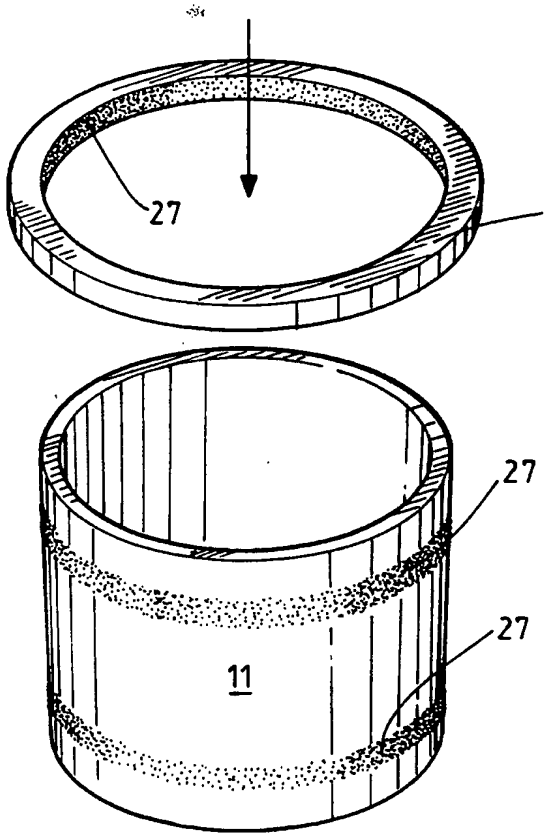


FIG 4

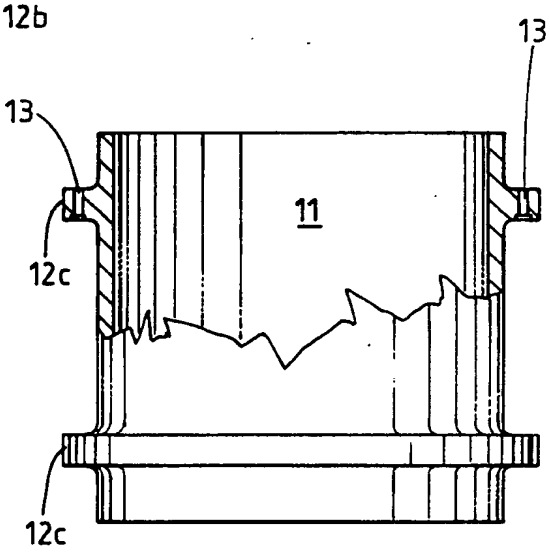


FIG 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 93/00360

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl.[5] G10D 13/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC : G10D 13/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU : IPC as above

Electronic data base consulted during the international search (name of data base, and where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	Derwent Abstract Accession No. 93-079063/10, Class P 86, GB 2259397-A (PREMIER PERCUSSION LTD) 10 March 1993 (10.03.93)	1,4,5,7, and 9
X	US 4993304 (KEN S. LOVELET) 19 February 1991 (19.02.91) Column 3 line 62 to column 4 line 7, column 4 line 64 to column 5 line 5, Figure 9, and the claims	1,2, and 4 to 10
X	US 4833964 (DEANE L. PROUTY) 30 May 1989 (30.05.89) Entire document	1,4, and 7

(continued)

[X] Further documents are listed in the continuation of Box C.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X	AU,B, 36041/84 (560569) (LEGATO PTY LTD) 6 June 1985 (06.06.85) Entire document	1,4, and 7
X	US 3981220 (FORREST W. CLARK) 21 September 1976 (21.09.76) Column 2 line 26 to column 3 line 26	1,4, and 7

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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Patent Document Cited in Search Report	Patent Family Member					
AU 36041/84	CA	1225263	GB	2150732	NZ	210402
	US	4619179				
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